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Bulletin 405 September, 1953

THE UNIVERSITY OF NEW HAMPSHIRE
AGRICULTURAL EXPERIMENT STATION

Department of Agricultural and Biological Chemistry

Inspection of Commercial Fertilizers

Made for the

STATE DEPARTMENT OF AGRICULTURE

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THE UNIVERSITY OF NEW HAMPSHIRE
DURHAM, N. H.

INSPECTION OF COMMERCIAL FERTILIZERS

Made for the

State Department of Agriculture

The inspection of commercial fertilizers reported in this bulletin was made under the direction of the Honorable Perley I. Fitts, Commissioner of Agriculture. Mr. George H. Laramie, Fertilizer Control Supervisor, and Mr. Harold W. Ayer, Inspector, collected samples of 123 brands of mixed fertilizer and fertilizer materials which were offered for sale by dealers or had been delivered to consumers during the year ending June, 1953. The general character of the brands sampled is shown by the following classification:

Complete fertilizer	75
Phosphoric acid and potash	15
Superphosphate	8
Nitrate of Soda	2
Ammonium nitrate	2
Ammonium sulfate	1
Ground bone	5
Natural manures	10
Tankage	2
Milorganite	2
Soil Conditioner	1

THE FERTILIZER LAW

Copy of the full text of the law may be obtained from the Fertilizer Control Supervisor, State House, Concord, New Hampshire. All inquiries relative to the registration of brands and of matters relating to the enforcement of the law should be addressed to his office.

The law governing the guarantees and labeling of commercial fertilizers or fertilizer materials follows:

"Every lot or parcel of commercial fertilizer or fertilizer material sold or offered or exposed for sale within this state shall be accompanied by a plainly printed statement, clearly and truly certifying the number of net pounds of fertilizer in the package; the name, brand or trademark under which the fertilizer is sold; the name and address of the manufacturer or importer; the location of the factory; and a chemical analysis stating the minimum percentage of nitrogen, of available phosphoric acid and of water-soluble potash expressed in whole numbers.

"No fertilizer or fertilizer material containing the three essential fertilizing elements, nitrogen, phosphoric acid and potash may be sold or offered for sale if the total minimum plant food nutrients contained therein is less than fourteen per cent by weight, provided, however, that natural animal and bird manures shall be excepted from the provisions of this section."

The chief purpose of the official inspection required by the fertilizer law is to protect the consumer against the misbranded products which doubtless would soon appear on the market if the sale of the fertilizer was not under state regulation. The purchaser of fertilizer or fertilizer materials should acquaint himself with the full text of the law. He should not accept from the dealer any bag of fertilizer which is not tagged and guaranteed in compliance with the law. If he does so, it is at his own risk.

The value of a fertilizer depends mainly upon its content of available plant food, particularly nitrogen, phosphoric acid and potash. Research workers in

agricultural experiment stations and industrial research groups are constantly studying the needs of the soil to improve crop yields. As a result of these studies, other plant nutrients are included in certain fertilizers for specific crops. Magnesium and boron are examples of so-called minor elements furnished by some brands of fertilizer to correct specific deficiencies of the soil in certain localities.

Soil conditioners are materials that have been widely advertised. Their main purpose is to improve soil texture. They may or may not contain added plant food. These materials in themselves supply little or no plant food. They are relatively expensive and their use has therefore been limited. There is no accepted method of measuring their relative effectiveness as to whether results as claimed will be obtained. These materials are still in the trial period. They apparently give good results in changing certain soil conditions.

It is well known that there is much advertising of fertilizer materials directed to the attention of the small home gardener and house plant growers. It is realized that plant food concentrate supplied in small packages has a place. However, certain advertising claims have been open to question. In fact during the past year the American Association of Fertilizer Control Officials issued a warning to the public through the press against "exorbitant and questionable claims" in regard to fertilizer materials for home garden and flower production. Generally speaking, it is more economical for the gardener to purchase fertilizer of a reliable brand and in reasonably large size packages.

All control officials charged with the enforcement of state laws regulating the sale of commercial fertilizers and fertilizer materials are joined in the Association of American Fertilizer Control Officials. Research workers employed by State or Federal Agencies engaged in the investigation of fertilizers are also members of this Association. The object of this organization is to "promote uniform and effective legislation, definitions, rulings, and enforcement of laws relating to the control of sale and distribution of mixed fertilizers and fertilizer materials in the Continent of North America." Annual meetings of this Association are held at which reports and recommendations of investigators concerning definitions of fertilizer materials, use of new products, and problems concerning regulation of the fertilizer trade are discussed in detail. Fertilizer manufacturers are invited to participate in these discussions and through mutual cooperation the farmer is supplied with a product that can be relied upon to do the job expected in crop production. The official publication of the Association may be obtained for a small fee through the office of its secretary, B. D. Cloaninger, Clemson, South Carolina. This booklet contains the official terms describing fertilizer materials, a proposed model state fertilizer law as well as the proceedings of the annual meeting.

Whether or not a fertilizer contains the guaranteed amount of plant food can be determined only by a chemical analysis. For this reason it is considered necessary that each brand of fertilizer offered for sale be officially sampled and analyzed each year. When failure to meet the guarantee is proved by chemical analysis, the prosecution or seizure provisions of the law may be invoked. The purchaser's refusal to buy a fertilizer which does not conform to the law will not only assist in the enforcement of the law but will at the same time insure him the protection of the law.

USE OF COMMERCIAL FERTILIZERS

It is not within the scope of this department to make recommendations regarding the use of commercial fertilizers. The Department of Agronomy and the Department of Agricultural and Biological Chemistry of the University of New Hampshire Agricultural Experiment Station test soils and conduct experimental work with various fertilizer materials on hay and crop land. The Department of Horticulture investigates fertilizer treatments for fruits and vegetables. Much of this work has been published, and is available for free distribution to residents of

New Hampshire. Address your request to Mail Service, University of New Hampshire, Durham, New Hampshire.

Sta. Cir.	58	Fertilizer Needs of Alfalfa on New Hampshire Soils. 12 pp.
Sta. Cir.	59	Effect of Soil Moisture and Fertilizer Placement on Vitality of the Potato Seed Piece. 11 pp.
Sta. Cir.	61	Fertility Needs of Dairy Farm Crops in the Connecticut Valley. 12 pp.
Sta. Cir.	63	Fertilizers for Sweet Corn. 8 pp.
Sta. Cir.	74	The Response of Clover and Total Forage to Top-Dressing Fertilizers. 12 pp.
Sta. Bull.	324	Experiment with Potatoes. 38 pp.
Sta. Bull.	362	Purchasing Fertilizers in New Hampshire. 31 pp.
Ext. Cir.	210	Purchasing Lime and Fertilizer. 12 pp.
Ext. Cir.	212	Cabbage. 4 pp.
Ext. Cir.	266	Root Crops. 20 pp.
Ext. Cir.	275	Culture of Low-Bush Blueberries. 16 pp.
Ext. Cir.	299	Tomatoes for New Hampshire. 20 pp.
Ext. Bull.	100	Growing Apples in New Hampshire. 32 pp.
Ext. Bull.	104	Growing Vegetables at Home. 32 pp.
Ext. Bull.	105	Asparagus in New Hampshire. 16 pp.
Ext. Bull.	116	Hotbeds and Coldframes. 15 pp.
Ext. Folder	25	New Hampshire Recommendations for Seed, Fertilizer, and Lime.

While the word fertilizer does not appear in all of the above titles, no publication is included which does not discuss the use of fertilizer.

FERTILIZER RECOMMENDATIONS

NEW HAMPSHIRE RECOMMENDATIONS for FERTILIZER USE

(Supplied by the Agronomy Department of the New Hampshire Agricultural Experiment Station)
(Reprinted with their permission from Extension Folder 25 June 1953)

(To be more certain of your fertilizer recommendations, see your county agricultural agent about having your soil tested. On the basis of this test, the recommendations may vary from those shown here.)

Crop	Lime to pH	Grade of Fertilizer in Pounds Per Acre (or its equivalent)		Remarks
		At Time of Planting	Top-Dress or Side-Dress (Annually)	
New Seedings	6.5	600 lbs. 5-10-10 or 400 lbs. 8-16-16		Reduce the recommended fertilizer by 100 lbs. for each 2 tons of reinforced stable manure or 1 ton of poultry manure applied. If alfalfa is in the mixture, use 30 lbs. of borax per acre.
Established Stands Legumes	6.5		700 lbs. 0-14-14 or 400 lbs. 0-15-30 or 500 lbs. 0-20-20	If alfalfa is in the mixture, use fertilizer containing borax.
Legumes and Grasses	6.5		800 lbs. 5-10-10 or 500 lbs. 8-16-16	If alfalfa is in the mixture, use fertilizer containing borax.
Grasses	6.5		600 lbs. 7-7-7 or 400 lbs. 10-10-10	Reduce the recommended fertilizer by 100 lbs. for each 2 tons of reinforced stable manure or 1 ton of poultry manure applied.

Sudan, Millet, Rye	6.5	400 lbs. 10-10-10 or 600 lbs 7-7-7			Reduce the recommended fertilizer by 100 lbs. for each 2 tons of reinforced stable manure or 1 ton of poultry manure applied.
Corn Sweet Silage Grain	6.5	1,000 lbs. 10-10-10 or 1,400 lbs. 7-7-7 or 1,000 lbs. 5-10-10 or 600 lbs. 8-16-16	Broadcast ¾ and apply ¼ in planter	100 lbs. Ammonium Nitrate when 10-10-10 or 7-7-7 is applied, and 259 lbs. Ammonium Nitrate when 5-10-10 or 8-16-16 is used.	Side-dress when corn is 1 ft. high. In a wet season, use more nitrogen. Reduce the recommended fertilizer by 100 lbs. for each 2 tons of reinforced stable manure or 1 ton of poultry manure applied.
Potatoes	5.0	2,000 lbs. 5-10-10 or 1,250 lbs. 8-16-16 or 1,500 lbs. 8-12-12			Use fertilizer containing magnesium.
Home Gardens and Commercial Vegetables	6.0	1,200 lbs. 8-16-16 or 2,000 lbs. 5-10-10 or 2,000 lbs. 5-10-5 or 1,300 lbs. 10-10-10			Reduce the recommended fertilizer by 100 lbs. for each 2 tons of reinforced stable manure or 1 ton of poultry manure applied.
Lawns and Turfs New seedings	5.5	25 lbs. 5-10-10 or 15 lbs. 8-16-16	per 1,000 sq. ft.		Also incorporate in soil, 1 bale of peat moss (16-18 bu.) or 10 bu. of poultry manure, or 20 bu. of stable manure, or compost per 1,000 sq. ft.
Established Lawns and Turfs	5.5			10 lbs. 10-10-10 or 15 lbs. 7-7-7 per 1,000 sq. ft.	On soils low in organic matter, use an equivalent amount of an organic base fertilizer such as 10-6-4 or 8-6-2. Apply all fertilizer in split application in April and September.

Crop	Lime to pH	Grade of Fertilizer in Pounds Per Acre (or its equivalent)		Remarks
		At Time of Planting	Top-Dress or Side-Dress (Annually)	
Fruit	6.0			
Apples			Use 1/8 lb. of Ammonium Nitrate for each year of age of the tree, up to 5 lbs. per tree. Also use 1/2 lb. of borax for each mature tree every 3 years.	When lime is needed, use only dolomitic limestone and not more than 2 tons per application.
Strawberries	6.0		15 tons of stable manure or 7 1/2 tons of poultry manure.	Disc manure into soil 2 weeks before planting. Mulch with hay or straw when ground begins to freeze.
Raspberries	5.5		10 tons of stable manure or 5 tons of poultry manure plus 50 lbs. of Ammonium Nitrate.	Cultivate shallow.
Blueberries (cultivated)				
Young plants	4.5		1/2 teaspoonful Ammonium Sulfate per plant for each foot of height. Apply every 7 days during May.	Spread evenly under drip of plant.
Mature Plants	4.5		4 oz. (2/3 cup) 10-10-10 or 6 oz. (1 cup) 7-7-7 per plant. Apply May 1 and June 1.	Spread evenly under drip of plant.

Helpful Hints

1. Reinforce stable manure with 2 lbs. of 20% superphosphate per cow per day.
2. Even though manure may replace some of the commercial fertilizer used, it is desirable to apply at least ¼ to ½ of the above amounts of commercial fertilizers in order to hasten early spring growth.
3. One ton of cow manure as it comes from the stable is approximately equal to: 50 cubic feet; 40 bushels; 0.4 cords.
4. Small and frequent applications of manure are more effective than is the same amount of manure applied in larger amounts and less frequently.
5. Equivalent amounts of other nitrogen fertilizers may be substituted for ammonium nitrate, although at a greater cost per pound of nitrogen. One hundred pounds of ammonium nitrate is approximately equal to 160 pounds of ammonium sulfate or 200 pounds of nitrate of soda.
6. If the soil test indicates a need for lime, then apply lime well in advance of adding fertilizers so as to make the fertilizers more effective.
7. Since New Hampshire soils are low in magnesium, it is best to use dolomitic limestone which contains magnesium.

CONFORMITY TO GUARANTEE

The chemical analyses reported in this bulletin were made by the methods adopted by the Association of Official Agricultural Chemists.

Number of brands analyzed	123
Equalling or exceeding all guarantees	52
Deficient in nitrogen only	33
Defiicent in available phosphoric acid only	24
Deficient in potash only	4
Deficient in nitrogen and phosphoric acid	2
Deficient in nitrogen and potash	5
Deficient in phosphoric acid and potash	2
Deficient in nitrogen, phosphoric acid, and potash	1

Fourteen brands were guaranteed to contain magnesium oxide. None failed to meet the guarantee.

Fertilizers are largely mixtures of highly purified chemicals. Segregation of these materials in the bag is difficult to prevent. Modern methods of fertilizer manufacture are doing much to process the fertilizer in such a way that segregation will be prevented. The problem has not been satisfactorily solved as yet. To obtain a truly representative sample of a fertilizer mixture requires careful work. The chemist can accurately determine the nitrogen, phosphoric acid, and potash content of the sample sent to the laboratory. If this sample does not correctly represent the larger lot, the analytical work is of no use. The obligation of the fertilizer control program is to see that the manufacturer is supplying the guaranteed amount of plant food to the consumer. For this reason the sample must be drawn and analyzed very carefully so that injustice will not be done to either the consumer or manufacturer.

In the tabulation of the analyses in the following pages, deficiencies of one-half of one per cent or more are shown in red ink. The names of the manufacturers are arranged alphabetically. The brand names are listed alphabetically, or numerically by formula, under the manufacturer.

	Sample Drawn In	Nitrogen		Phosphoric Acid				Potash		Magnesium Oxide	
				Total		Available					
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
Allied Chemical & Dye Corp. **New York, New York**											
"Arcadian" the American Nitrate of Soda 16% Nitrogen	Dover	16.00	16.10	.....	.....	.....	.....	.....	.....	.....	.....
A. N. L. 20.50%	Plymouth	20.50	20.55	.....	.....	.....	.....	.....	.....	.....	.....
American Agricultural Chemical Co. **N. Weymouth, Mass.**											
Agrico for Corn 4-12-4	Portsmouth	4.00	4.23	.....	12.71	12.00	11.46	4.00	4.66	.....	.....
Agrico for New England 5-8-7	Portsmouth	5.00	4.62	.....	9.03	8.00	8.19	7.00	7.01	.....	.....
AA Quality Fertilizer 5-8-7	Exeter	5.00	4.82	.....	8.46	8.00	8.05	7.00	7.67	.....	.....
Agrico for Potatoes 5-10-10	Portsmouth	5.00	5.01	.....	10.46	10.00	9.90	10.00	10.42	.....	.....
AA Quality Fertilizer 5-10-10	Exeter	5.00	5.04	.....	10.99	10.00	10.32	10.00	11.07	.....	.....
Agrico for Lawns, Trees and Shrubs	Portsmouth	6.00	5.85	.....	11.06	10.00	10.34	4.00	4.79	.....	.....
Agrico for Top Dressing	Plymouth	7.00	6.34	.....	9.30	7.00	9.01	7.00	7.45	.....	.....
Agrinite	Portsmouth	8.25	8.12	.....	.....	.....	.....	.....	.....	.....	.....
Bone Meal	Plymouth	1.50	1.80	25.00	30.32	.....	.....	.....	.....	.....	.....
18% Normal Superphosphate	Portsmouth	.....	.....	.....	18.77	18.00	18.02	.....	.....	.....	.....
Pulverized Sheep Manure	Plymouth	1.50	1.07	1.00	1.50	.....	.....	2.00	3.58	.....	.....
American Cyanamid Co. **New York, New York**											
Aeroprills, Ammonium Nitrate	Concord	33.50	33.56	.....	.....	.....	.....	.....	.....	.....	.....

Apothecaries Hall Co.
Waterbury, Conn.

Liberty Brand Fertilizer 0-14-14	Manchester				15.21	14.00	14.91	14.00	15.07		
Liberty Bone Meal	Manchester	2.25	2.49	22.00	28.50						
Liberty Brand Fertilizer 3-12-12	Colebrook	3.00	3.31		12.62	12.00	12.49	12.00	12.33		
Liberty Brand Fertilizer 4-12-4	Manchester	4.00	4.15		12.90	12.00	11.73	4.00	4.46		
Liberty 4-12-4	Ashland	4.00	4.50		12.62	12.00	12.06	4.00	5.08		
Liberty 5-8-7	Ashland	5.00	5.11		9.04	8.00	8.83	7.00	7.92		
Liberty Brand Fertilizer 5-8-7	Manchester	5.00	5.01		8.53	8.00	8.23	7.00	7.24		
Liberty 5-10-5	Ashland	5.00	5.01		10.79	10.00	10.38	5.00	5.92		
Liberty Brand Fertilizer 5-10-10	Manchester	5.00	5.13		10.86	10.00	10.66	10.00	10.08		
Liberty Brand Fertilizer 5-10-10-1.2	Manchester	5.00	5.12		10.51	10.00	10.23	10.00	7.48	1.20	2.35
Liberty 5-10-10-2	Ashland	5.00	4.81		10.42	10.00	10.01	10.00	11.28	2.00	3.42
Liberty Garden Gro Fertilizer 6-7-4	Manchester	6.00	5.45		9.37	7.00	8.99	4.00	6.18		
Liberty Special for Fruit and Grass 7-7-7	Manchester	7.00	6.90		7.79	7.00	7.65	7.00	7.50		
Liberty Landscape and Golf Course 8-6-2	Manchester	8.00	8.85		6.37	6.00	6.15	2.00	3.32		
Liberty 20% Superphosphate Granulated	Manchester				21.92	20.00	20.20				
Liberty Brand Sheep Manure	Manchester	1.00	1.13		0.21	2.00	0.10	1.00	3.42		

Armour Fertilizer Works
Carteret, N. J.

Armour All Organic	Keene	6.00	5.56								
Bone Meal	Keene	2.30	2.39	23.00	25.75						
Armour Big Crop Fertilizer 5-8-7	Keene	5.00	4.84		8.60	8.00	8.07	7.00	6.68		
Armour's Big Crop Fertilizer 5-8-7	Dover	5.00	5.01		9.09	8.00	8.77	7.00	7.33		
Armour Vertagreen Plant Food 5-10-5	Keene	5.00	4.89		10.70	10.00	10.27	5.00	5.20		
Armour Vertagreen Plant Food 5-10-5	Dover	5.00	5.01		11.27	10.00	10.82	5.00	5.22		
Armour Big Crop Fertilizer 5-10-10	Keene	5.00	4.86		11.35	10.00	10.65	10.00	9.88		
Armour's Big Crop Fertilizer 5-10-10	Dover	5.00	5.01		10.57	10.00	10.09	10.00	10.64		
Armour Vertagreen Plant Food for Commercial Crop 6-12-12	Keene	6.00	6.08		11.79	12.00	11.34	12.00	12.24		
Armour Big Crop Fertilizer 7-7-7	Keene	7.00	6.42		7.38	7.00	7.18	7.00	6.82		
Armour's Vertagreen Plant Food for Professional Use 10-6-4	Dover	10.00	9.77		7.50	6.00	7.28	4.00	4.95		
Armour Sheep Manure	Keene	1.50	1.37	1.00	1.39			2.00	4.24		
Armour Sheep Manure	Dover	1.50	1.09	1.00	1.17			2.00	3.80		

	Sample Drawn In	Nitrogen		Phosphoric Acid				Potash		Magnesium Oxide	
				Total		Available					
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
Atkins & Durbrow New York 7, New York											
Driconure	Concord	2.00	2.07	1.00	1.45	.....	.....	1.00	1.80	.....	.....
Bruncote, Inc. Franklin, Mass.											
Meadow Brand Sheep Manure	Portsmouth	1.50	2.28	0.40	0.25	.....	.....	2.50	2.99	.....	.....
Buell Fertilizer Co. Exeter, N. H.											
Buell Peat-Poultry Manure	Portsmouth	3.00	3.01	3.00	3.31	.....	.....	1.50	2.35	.....	.....
Chilean Nitrate Sales Corp. 120 Broadway, N. Y., N. Y.											
Chilean Nitrate of Soda	Portsmouth	16.00	16.18	.....	.....	.....	.....	.....	.....	.....	.....
Consolidated Rendering Co. Boston, Mass.											
Corenco (ACP) 0-10-20	Concord	.....	.....	.....	10.46	10.00	10.40	20.00	20.88	.....	.....
Corenco (ACP) 0-14-14	Concord	.....	.....	.....	14.09	14.00	14.05	14.00	14.01	.....	.....
Corenco 0-20-20	Concord	.....	.....	.....	18.85	20.00	18.74	20.00	22.10	.....	.....
Corenco 0-20-20	Concord	.....	.....	.....	18.90	20.00	18.65	20.00	20.58	.....	.....

Corenco 0-20-20	Manchester	.....	.....	.....	20.97	20.00	20.68	20.00	20.32	.....	.....
Corenco ACP 0-20-20	Laconia	.....	.....	.....	18.10	20.00	17.65	20.00	20.24	.....	.....
Corenco Ground Bone	Concord	2.00	2.01	22.00	29.90	.....	.....	.....	.....	.....	.....
Corenco Potato & General Crop 5-8-7	Gerrish	5.00	5.03	.....	8.06	8.00	7.82	7.00	8.03	.....	.....
Corenco 5-8-7 Potato and General Crop	Exeter	5.00	5.01	.....	8.12	8.00	8.01	7.00	7.44	.....	.....
Corenco Home Garden Fertilizer	Plymouth	5.00	5.34	.....	10.97	10.00	10.73	5.00	5.33	.....	.....
Corenco 5-10-10	Manchester	5.00	5.07	.....	10.13	10.00	9.67	10.00	10.60	.....	.....
Corenco 7-7-7	Concord	7.00	7.47	.....	7.24	7.00	7.14	7.00	7.30	.....	.....
Corenco 10-10-10	Gerrish	10.00	9.56	.....	10.22	10.00	10.02	10.00	10.01	.....	.....
Corenco (ACP) 20% Superphosphate	Concord	.....	.....	.....	19.17	20.00	19.11	.....	.....	.....	.....
Corenco Sheep Manure 2-1-2	Nashua	2.00	1.69	1.00	1.25	.....	.....	2.00	2.01	.....	.....
Corenco Superphosphate 20%	Manchester	.....	.....	.....	19.55	20.00	18.93	.....	.....	.....	.....
Davison Chemical Corp. Baltimore, Md.											
Davco Granulated Fertilizer 5-10-10	Manchester	5.00	5.16	.....	10.68	10.00	10.55	10.00	10.55	.....	.....
Davco Granulated Fertilizer 8-16-16	Colebrook	8.00	8.10	.....	16.55	16.00	16.47	16.00	16.01	.....	.....
Davco Granulated Superphosphate 20%	Manchester	.....	.....	.....	22.03	20.00	20.88	.....	.....	.....	.....
Eastern States Farmers' Exchange, Inc. W. Springfield, Mass.											
Eastern States Fertilizer 0-15-30	Woodsville	.....	.....	.....	.....	15.00	15.06	30.00	30.84	.....	.....
Eastern States 0-20-20	Woodsville	.....	.....	.....	22.39	20.00	21.84	20.00	18.60	.....	.....
Eastern States Fertilizer 5-10-10	Dover	5.00	5.19	.....	11.37	10.00	11.26	10.00	10.62	.....	.....
Eastern States 5-15-15	Woodsville	5.00	5.09	.....	16.16	15.00	15.40	15.00	15.83	.....	.....
Eastern States 8-12-12	Woodsville	8.00	7.23	.....	13.11	12.00	12.65	12.00	14.08	.....	.....
Eastern States Fertilizer 8-12-16	Woodsville	8.00	7.78	.....	13.36	12.00	12.96	16.00	15.80	.....	.....
Eastern States Fertilizer 8-16-16	Woodsville	8.00	7.70	.....	17.29	16.00	16.59	16.00	16.20	1.00	1.79
Eastern States Fertilizer 8-16-16	Dover	8.00	7.88	.....	16.85	16.00	16.18	16.00	16.40	.....	.....
Eastern States Fertilizer 10-10-10	Dover	10.00	9.86	.....	10.63	10.00	10.30	10.00	10.29	.....	.....
Eastern States Pulverized Superphosphate 20%	Dover	.....	.....	.....	20.56	20.00	20.06	.....	.....	.....	.....

	Sample Drawn In	Nitrogen		Phosphoric Acid				Potash		Magnesium Oxide	
				Total		Available					
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
Fox Point Chemical Co. E. Providence, R. I.											
Old Fox Fertilizer 0-10-20	Concord	.....	.....	.....	9.76	10.00	9.26	20.00	21.46	.....	.....
Old Fox Fertilizer 0-20-20	Brentwood	.....	.....	.....	20.46	20.00	20.28	20.00	18.93	.....	.....
Old Fox Fertilizer 5-8-7-2	Exeter	5.00	5.06	.....	8.52	8.00	8.01	7.00	7.67	2.00	3.54
Old Fox Fertilizer 5-10-10	Brentwood	5.00	5.01	.....	10.01	10.00	9.72	10.00	10.66	.....	.....
Old Fox Fertilizer 5-10-10	Exeter	5.00	5.05	.....	10.24	10.00	9.73	10.00	11.07	.....	.....
Old Fox Fertilizer 7-7-7-2	Exeter	7.00	6.10	.....	8.15	7.00	7.70	7.00	7.33	2.00	3.38
Old Fox Turf Fertilizer 8-6-2	Exeter	8.00	8.01	.....	6.59	6.00	6.07	2.00	3.42	.....	.....
Old Fox Fertilizer 8-16-16	Exeter	8.00	8.01	.....	14.68	16.00	14.26	16.00	17.20	.....	.....
Old Fox Fertilizer 8-16-16	Brentwood	8.00	7.90	.....	15.56	16.00	15.12	16.00	16.24	.....	.....
Old Fox Fertilizer 0-20-0	Concord	.....	.....	.....	20.72	20.00	20.57	.....	.....	.....	.....
International Minerals & Chem. Co. Woburn, Mass.											
International 0-10-20	W. Lebanon	.....	.....	.....	10.65	10.00	10.19	20.00	20.53	.....	.....
International 0-14-14	W. Lebanon	.....	.....	.....	14.45	14.00	14.13	14.00	14.83	.....	.....
International 0-15-30	W. Lebanon	.....	.....	.....	16.31	15.00	15.95	30.00	30.56	.....	.....
International Fertilizer 0-20-20	Pembroke	.....	.....	.....	20.60	20.00	20.17	20.00	19.65	.....	.....
International Brand Fertilizer 4-12-16-1	Colebrook	4.00	3.88	.....	13.02	12.00	12.32	16.00	16.13	1.00	1.30
International Fertilizer 5-8-7-1	Manchester	5.00	5.01	.....	8.51	8.00	8.19	7.00	7.37	1.00	1.30
International 5-10-5-1	Meredith	5.00	5.01	.....	10.72	10.00	10.27	5.00	6.00	1.00	1.36
International Fertilizer 5-10-10-1	Manchester	5.00	5.01	.....	10.75	10.00	9.37	10.00	10.34	1.00	1.88
International 5-10-10-2	Meredith	5.00	4.91	.....	10.89	10.00	10.44	10.00	10.33	2.00	2.01

International Brand Fertilizer 6-12-12-2	Colebrook	6.00	5.87	.....	12.64	12.00	12.01	12.00	12.40	2.00	2.78
International Fertilizer 7-7-7-1	Manchester	7.00	6.89	.....	7.59	7.00	7.31	7.00	7.50	1.00	1.88
International 8-6-2-1	Meredith	8.00	7.70	.....	6.95	6.00	6.77	2.00	2.75	1.00	3.04
International 8-16-16	Meredith	8.00	7.56	.....	16.29	16.00	15.47	16.00	17.44	.....	.....
International Brand Fertilizer 10-10-10-1	Colebrook	10.00	9.30	.....	11.08	10.00	10.53	10.00	10.67	1.00	1.30
International Sulphate of Ammonia	W. Lebanon	20.56	20.64	.....	.....	.....	.....	.....	.....	.....	.....
International 20% Superphosphate	Meredith	.....	.....	.....	20.18	20.00	20.04	.....	.....	.....	.....
Loamium Company of America Harrison, N. J.											
Loamium 5-10-5	Manchester	5.00	6.38	.....	.....	10.00	12.60	5.00	6.66	.....	.....
Merrimack Farmers' Exchange, Inc. Concord, N. H.											
Merrimack Brand Fertilizer 5-8-7	Gerrish	5.00	5.02	.....	8.32	8.00	8.04	7.00	7.83	.....	.....
Merrimack Brand Fertilizer 5-8-7	Concord	5.00	5.02	.....	8.48	8.00	7.87	7.00	7.63	.....	.....
Merrimack 5-10-10	Laconia	5.00	5.01	.....	10.27	10.00	9.82	10.00	10.72	.....	.....
Merrimack Fertilizer 5-10-10	Benton	5.00	5.01	.....	10.12	10.00	9.82	10.00	8.81	.....	.....
Merrimack Brand Fertilizer 5-10-10	Manchester	5.00	4.90	.....	10.36	10.00	10.01	10.00	9.76	.....	.....
Merrimack Brand Fertilizer 5-10-10	Gerrish	5.00	5.01	.....	9.91	10.00	9.54	10.00	10.56	.....	.....
Merrimack Brand Fertilizer 5-10-10	Concord	5.00	5.03	.....	10.13	10.00	9.79	10.00	9.32	.....	.....
Merrimack Brand Fertilizer 7-7-7	Keene	7.00	6.84	.....	7.92	7.00	7.64	7.00	7.50	.....	.....
Merrimack Brand Fertilizer 7-7-7	Gerrish	7.00	6.74	.....	7.49	7.00	7.17	7.00	7.50	.....	.....
Merrimack Turf Green 8-6-4	Plymouth	8.00	8.03	.....	7.95	6.00	7.08	4.00	4.80	.....	.....
Merrimack 8-16-16	Plymouth	8.00	8.01	.....	15.43	16.00	15.01	16.00	17.36	.....	.....
Merrimack Brand Fertilizer 10-10-10	Concord	10.00	8.66	.....	10.65	10.00	10.13	10.00	10.80	.....	.....
John Reardon & Sons Cambridge, Mass.											
Rearco Ground Bone	Portsmouth	1.50	2.30	23.00	26.80	.....	.....	.....	.....	.....	.....
Rogers & Hubbard Co. Portland, Conn.											
Hubbard Weed Kil Lawn Food	Plymouth	6.00	6.25	.....	11.81	10.00	9.88	4.00	3.92	.....	.....

	Sample Drawn In	Nitrogen		Phosphoric Acid				Potash		Magnesium Oxide	
				Total		Available					
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
The Sewerage Commission of Milwaukee Milwaukee, Wisconsin											
Milorganite	Concord	6.00	5.86	.....	3.98	2.00	3.38	.....	.....	.....	.....
Milorganite 6-2-0	Concord	6.00	5.84	.....	3.93	2.00	3.53	.....	.....	.....	.....
Swift and Co. Baltimore, Md.											
Vigoro Complete Plant Food	Portsmouth	5.00	5.17	.....	10.82	10.00	9.27	5.00	5.18	.....	.....
Vigoro Complete Plant Food 5-10-5	Concord	5.00	5.17	.....	10.88	10.00	9.64	5.00	5.52	.....	.....
Pulverized Sheep Manure	Keene	2.00	1.73	1.00	1.58	.....	.....	2.00	3.12	.....	.....
Walker-Gordon Lab. Co. Plainsboro, N. J.											
Bovung Cow Manure Dehydrated 2-1-1	Nashua	2.00	2.01	1.00	1.42	.....	.....	1.00	2.33	.....	.....